SCIENCE PLANNER: WEEK OF10.21.19

OBJECTIVES FOR THE WEEK:

Biology : What is DNA and how does it work? Bio.3.1.2 Explain how DNA and RNA code for proteins and determine traits. Bio.3.1.3 Explain how mutations in DNA that result from interactions with the environment (i.e. radiation and chemicals) or new combinations in existing genes lead to changes in function and phenotype.

Chemistry: How do we count (and account for) atoms? Chm.2.2.4 Analyze the stoichiometric relationships inherent in a chemical reaction.

DAILY AGENDA – (SUBJECT TO CHANGE) https://evansccca.weebly.com/

DAY	Biology	Chemistry
Mon 10.21	**NOTES: Heredity** **Practice: Punnett Squares** ***HW= MONOhybrid cross practice questions on your OWN paper.**	**THREE RING CIRCUS** **-most students will be REDOING the test!** **-The rest get to make the mole town maze!!!** **RY, BH, KJ, ..JB, AE, SLa** ***HW= 16 balanced equations that match page 6 of reference table.**
Tues 10.22	**-hand in 10 cross practices** **-NOTES: dihybrid crosses** ***HW= quiz corrections and DO pg 7-10 of packet!!**	**-hand in 16 unique equations** **-TEST practice peeps** **-5 ALUMINUM equations (like warm up).** **-MOLETOWN ideas**
Wed 10.23	**Go over HW** **Finish notes: complex genetics** ***HW= pg 21, 25 & 26**	QUIZ MOLE DAY CELEBRATION!!! *HW= pg 1 of writing ionic compounds, do quiz corrections on Warm up!!
Thurs	WARM UP	QUIZ parts 3 &4

10.24	STATION LAB! HW= double check ALL homework, finish lab and study for test.	Warm up will be quiz corrections. STATION LAB! HW= finish lab and study for test.
Fri 10.25	TEST- cumulative	TEST- cumulative

WARM UP ACTIVITIES

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HTTPS://WWW.FLIPPITY.NET/RP.ASP?K=1JY__BNWQKX8712O7FC41QKNPFEGZP7XYF-6YRTTSJWK

MON 10.21	**Describe 2-3 genetic traits that you are SURE came from just 1 of your parents.** Write balanced equations for the following: 1-Hydrogen gas burns in air in a synthesis reaction 2-Zinc metal is placed in sulfuric acid (single displacement) 3-Ammonium chloride reacts with Magnesium Phosphate in a double displacement reaction.
TUE 10.22	**Which numbers did you get wrong? (list here). Do corrections on the back of this sheet for homework ☺ BDACC, BEBBA** **Write and balance the following equations using Calcium metal rather than sodium metal:**

	1) $Na + Cl_2 \rightarrow 2NaCl$ 2) $2Na + 2H_2O \rightarrow 2NaOH + H_2$ 3) $2Na + 2HCl \rightarrow 2NaCl + H_2$ 4) $Na_2CO_3 \rightarrow Na_2O + CO_2$ 5) $2NaNO_3 + H_2SO_4 \rightarrow Na_2SO_4 + 2HNO_3$
WED 10.23	A plant that is heterogygous tall is pollinated by a plant that is homozygous tall. TALL IS DOMINANT. What are the chances of getting a short F1 generation? **Which numbers did you get wrong? (list here). Do corrections on the back of this sheet for homework ☺**
THU 10.24	**1)HAND IN ENTIRE PACKET!! 2) Describe the difference between Incomplete dominance and co-dominance.** **Which numbers did you get wrong? (list here). Do corrections on the back of this sheet for homework ☺**
FRI 10.25	**Give three examples of sex-linked disorders....then HAND IN WARM UPS!!** **Is breathing a chemical change? Explain why or why not....then HAND IN WARM UPS!!**

The Law of Dominance

Stated "simply" it goes like so:

In a cross of parents that are pure for contrasting traits, only one form of the

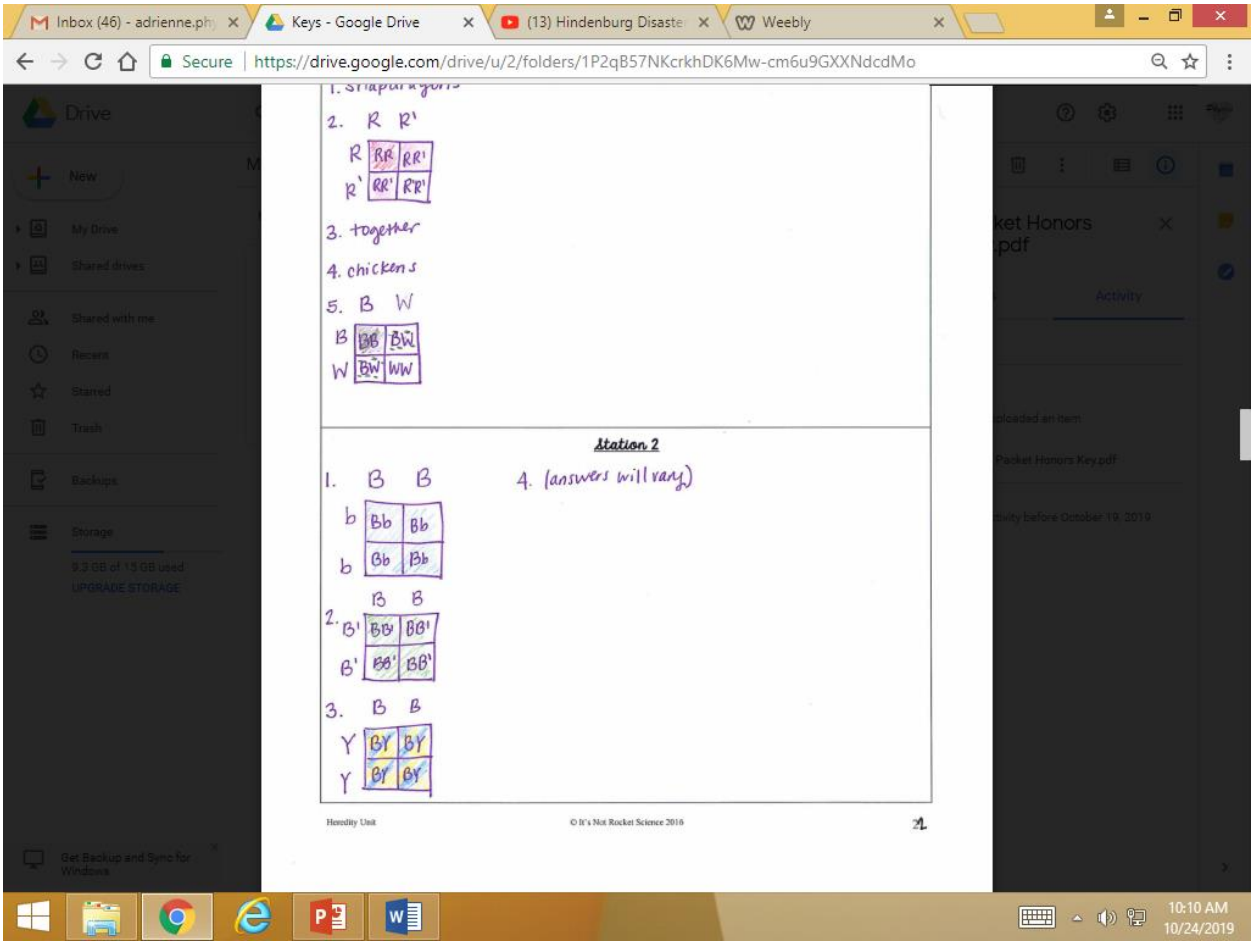
trait will appear in the next generation. Offspring that are hybrid for a trait will have only the dominant trait in the phenotype.

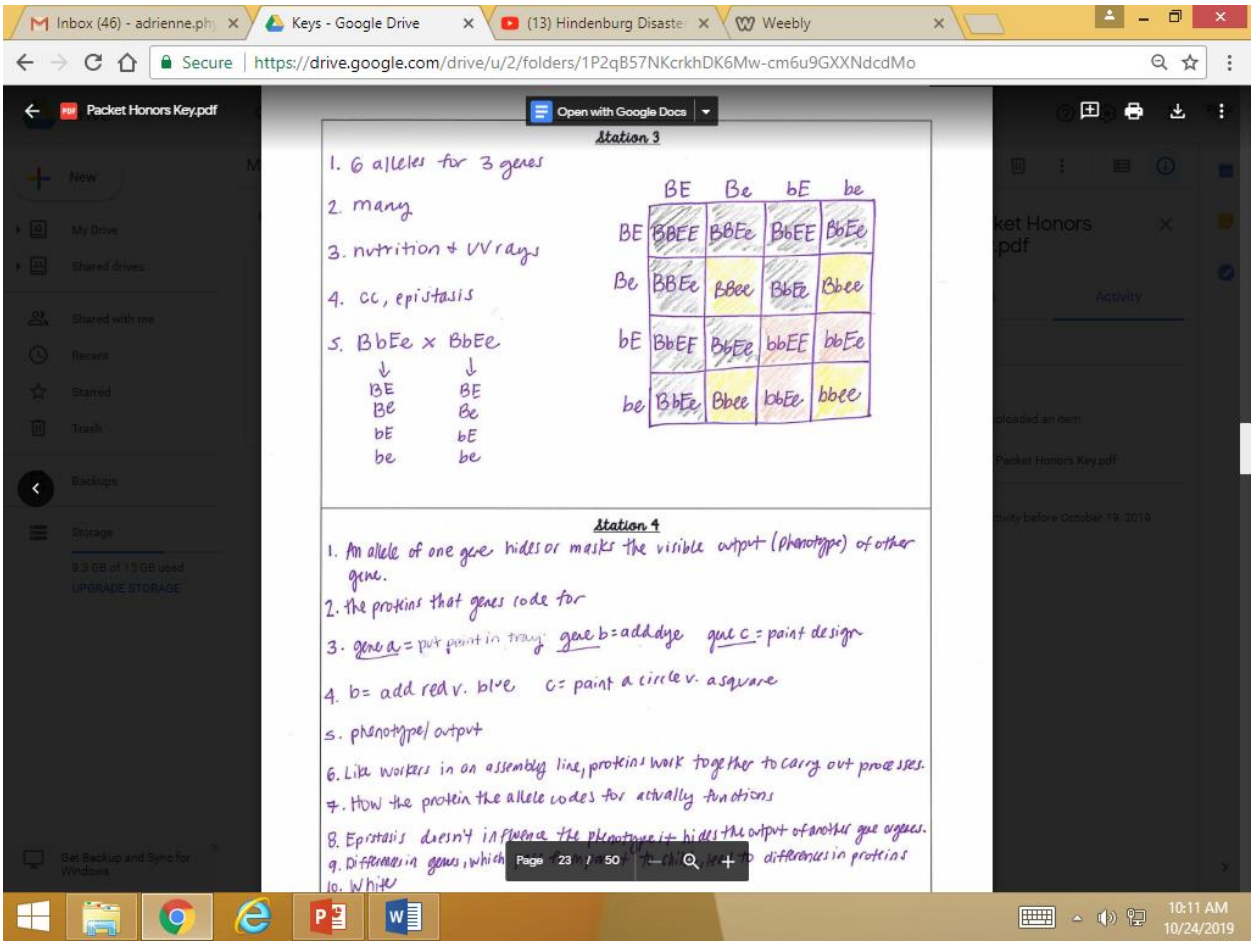
The Law of Segregation

Goes like so: During the formation of gametes (eggs or sperm), the two alleles responsible for a trait separate from each other. Alleles for a trait are then "recombined" at fertilization, producing the genotype for the traits of the offspring.

The Law of Independent Assortment

Alleles for *different* traits are distributed to sex cells (& offspring) independently of one another.

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Station 3
1. 6 alleles for 3 genes
2. many
3. nutrition + UV rays
4. cc, epistasis
5. BbEe x BbEe
BE Be bE be
BE Be bE be
BE Be bE be
BE BBEE BBEe BbEE BbEe
Be BBEe BBee BbEe Bbee
bE BbEE BbEe bbEE bbEe
be BbEe Bbee bbEe bbee
Station 4
1. An allele of one gene hides or masks the visible output (phenotype) of other gene.
2. the protein that genes code for
3. gene a = put paint in tray; gene b = add dye gene c = paint design
4. b= add red v. blue c= paint a circle v. a square
5. phenotype/ output
6. Like workers in an assembly line, protein work together to carry out processes.
7. How the protein the allele codes for actually functions
8. Epistasis doesn't influence the phenotype it hides the output of another gene expresses.
9. Difference in genes, which
to differences in proteins
10. White
Page 23 / 50
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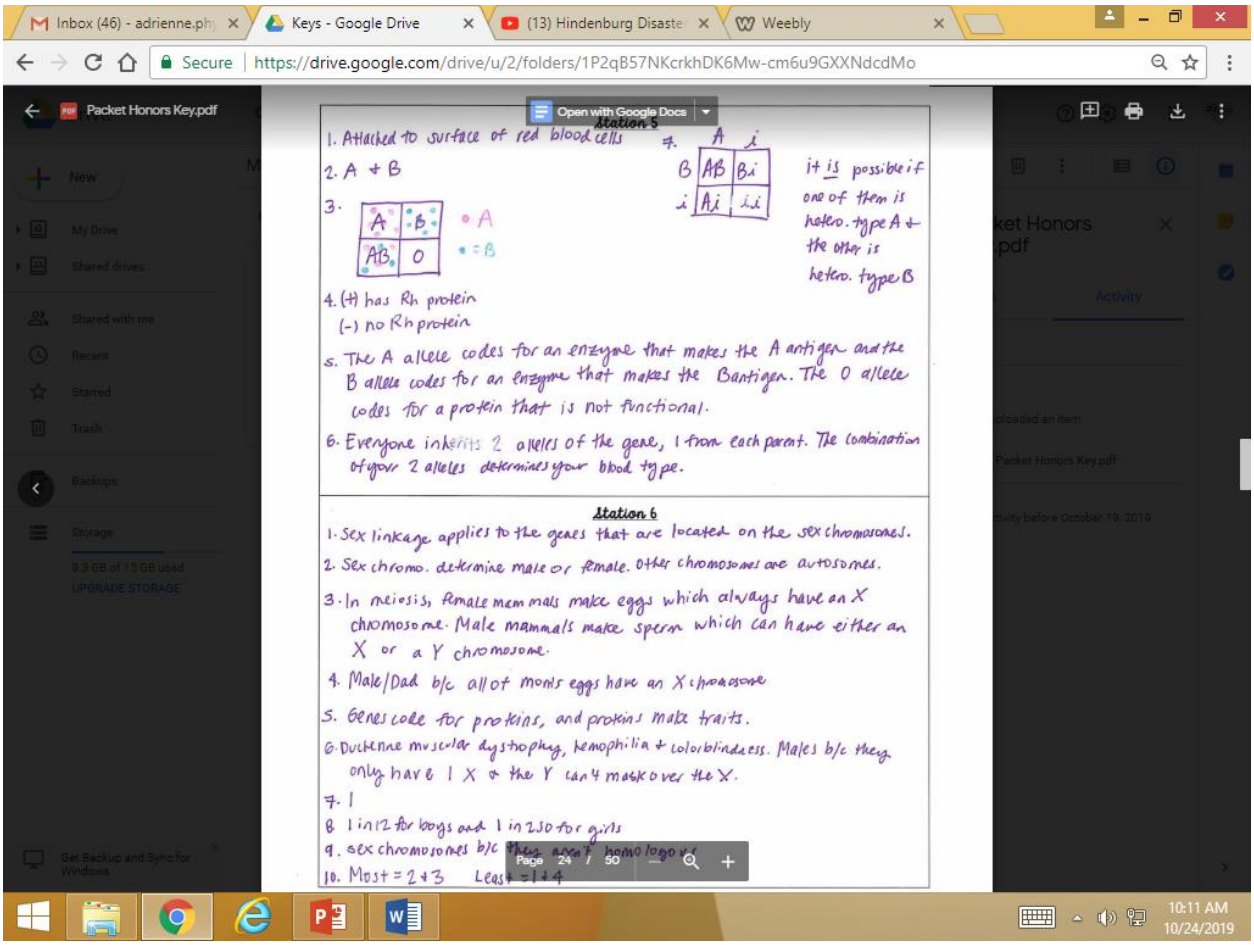
10/24/2019



https://hobart.k12.in.us/jkousen/Biology/mendel.htm

1. O When several genes influence a trait.
2. V A version of a gene
3. N When the heterozygous genotype results in a phenotype where both alleles are fully and separately expressed
4. A Chromosomes 1-44 in a human
5. E Only expressed in the homozygous state
6. Q Genes that travel on the X chromosome
7. L Chromosomes line up randomly during metaphase therefore it is possible for any combination of chromosomes to be passed on from parent to offspring.
8. T A diagram that shows homologous chromosome pairs
9. W The macromolecule that runs your body and expresses your traits
10. G A genotype resulting from the inheritance of two different alleles from your parents
11. Y Section of a chromosome that codes for a single protein
12. R Genes that are likely inherited together due to their physical proximity
13. D Overshadows the other allele in the heterozygous state
14. H The physical trait expressed
15. P More than 2 versions of a gene (more than just a "dominant" and a "recessive")
16. C Condensed genetic material
17. S When one gene overshadows another
18. K At the end of meiosis, each gamete formed should only have 1 copy form each homologous chromosome pair
19. F A genotype resulting from the inheritance of the same alleles from your parents
20. X The macromolecule that has the instructions for making you who you are
21. M When the heterozygous genotype results in a phenotype where the two alleles are blended together
22. I The actual alleles you inherit
23. B The chromosomes that determine your sex
24. U A person that has the gene for a trait or disease but doesn't show it
25. J Some versions of genes are dominant over others.

Practice: Complex Inheritance Word Problems

Answer the questions below about different complex inheritance patterns. Be sure to include a Punnett square to support your answers for #1-5.

1. In chickens, black feathers are codominant to white feathers. Create a Punnett square for a cross between two chickens that have both black and white feathers. Then list the phenotypic and genotypic ratios of offspring.

	B	W
B	BB	BW
W	BW	WW

Geno = 1:2:1 — 25% BB, 50% BW, 25% WW

Pheno = 1:2:1 — 25% Black, 50% Speckled, 25% White

2. Tim and Stephanie are devastated when they find out their newborn son has hemophilia – a sex-linked recessive disease. Tim is shocked because he doesn't have hemophilia, and figures if his son has it he would have gotten it from him. Is Tim correct in his thinking? Explain. Also explain what their genotypes must be in order for neither of them to have the disease but have a son who does.

	X^H	X^h
X^H	X^HX^H	X^HX^h
Y	X^HY	X^hY

- no b/c their son got Y from dad + affected X from mom.
- Tim = X^HY
  Steph = X^HX^h

3. Tim and Stephanie (from #2) are pregnant again! This time with a baby girl. They are nervous that she too may get hemophilia. Based on what you know about Tim and Stephanie, what is the probability that they do have a daughter with the disease? Show a Punnett square to support your answer.

0% chance

4. In carnations, red and white flowers make pink flowers. What complex inheritance pattern is this? Also, create a Punnett square for a cross between a red flower and a pink flower. Then list the phenotypic and genotypic rations of the offspring.

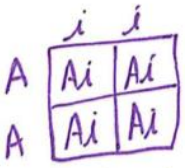
incomplete dominance

	R	R
R	RR	RR
R'	RR'	RR'

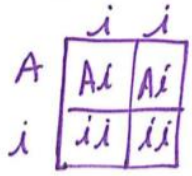
Geno = 1:1 — 50% RR, 50% RR'

Pheno = 1:1 — 50% red, 50% pink

5. Jessica is blood type A and her husband Graham is blood type O. She is worried because they are pregnant and their future child has a rare disorder which will require him to need regular blood transfusions. Jessica worries that if their son ends up with type O blood, like his father, it will be hard to get the necessary regular blood transfusions because people with O blood can only accept O blood. What is the likelihood of their child having blood type O? Use Punnett squares to show all possibilities.



0% if Jessica is homozygous type A



50% if Jessica is heterozygous Type A

6. In Labrador retrievers, some puppies have pink noses and some have black. Labrador retrievers with black fur almost always have black noses. What type of inheritance pattern is this? Explain how this is possible.

Linked genes
Possible if gene for fur color & nose color are physically close on the same chromosome.

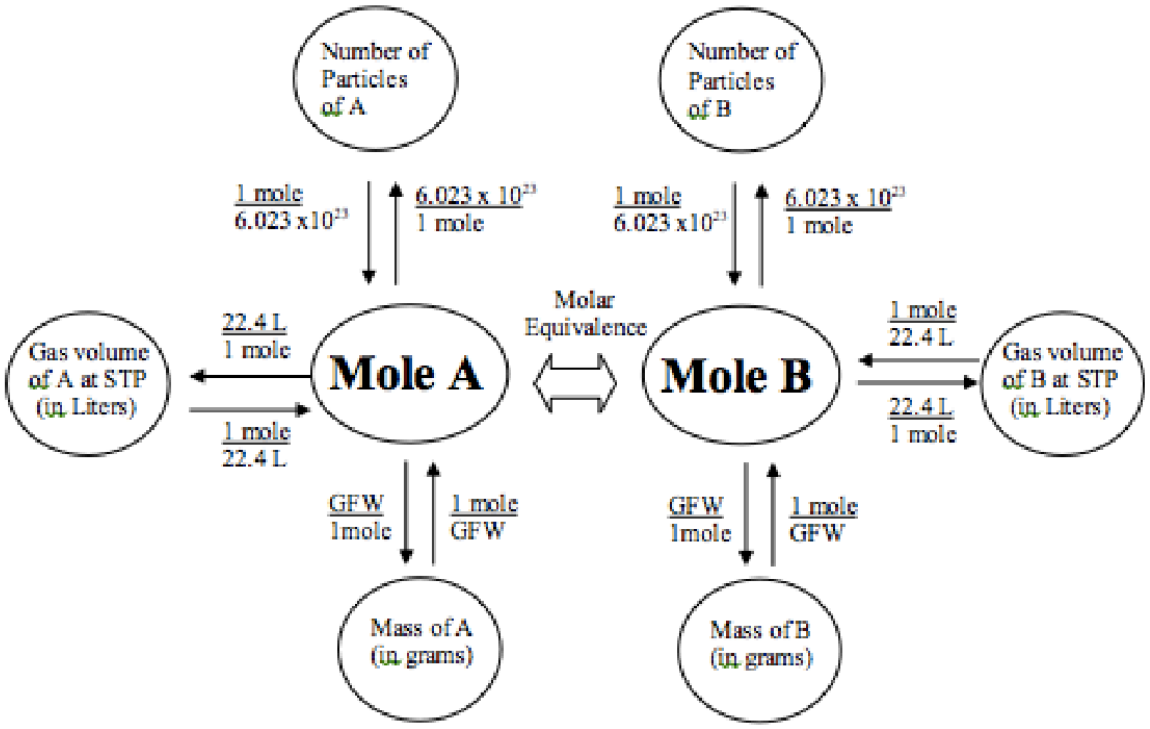
7. In cats, some are black, some are orange, and some are calico (fur that is both black and orange.) All calico cats are always female. This trait represents two inheritance patterns. List which two and explain how you know.

codominance b/c black + orange
sex-linked b/c only females get it $X^{H}X^{h}$

8. An organisms has three different versions of Gene Tyx – version a, b and c. Determine the inheritance pattern of this trait. Then list below all of the different genotypes that an organism with this gene could have.

Multiple alleles

aa ab
bb ac
cc bc



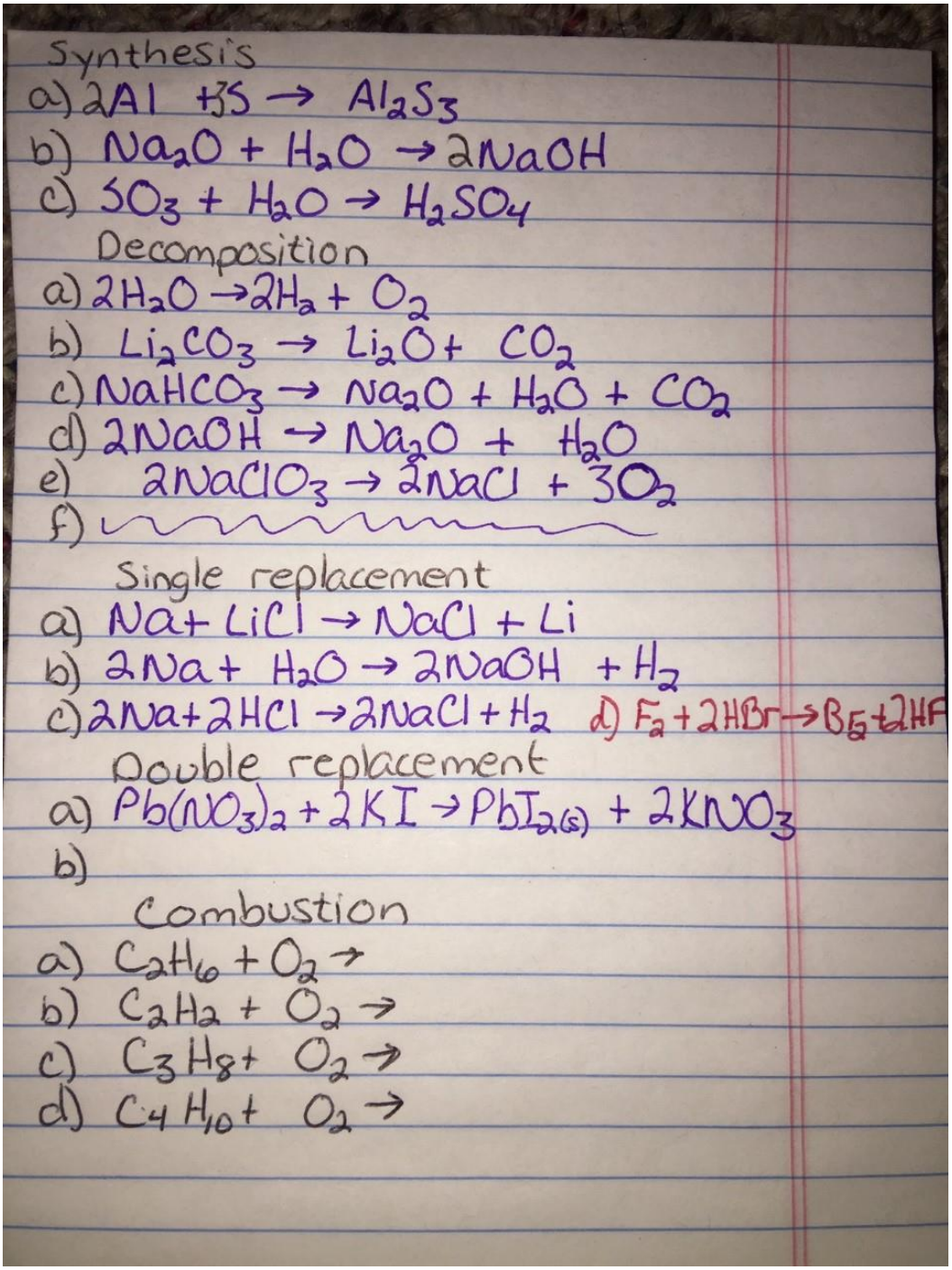
1. SYNTHESIS:
   a. Formation of binary compound: A + B → AB
b. Metal oxide-water reactions: MO + H2O → base
c. Nonmetal oxide-water reactions: (NM)O + H2O → acid

2. DECOMPOSITION:
a. Binary compounds: AB → A + B
b. Metallic carbonates: MCO3 → MO + CO2
c. Metallic hydrogen carbonates: MHCO3 → MO+ H2O(l) + CO2(g)
d. Metallic hydroxides: MOH → MO + H2O
e. Metallic chlorates: MClO3 → MCl + O2
f. Oxyacids decompose to nonmetal oxides and water: acid → (NM)O + H2O

3. SINGLE REPLACEMENT:
a. Metal-metal replacement: A + BC → AC + B
b. Active metal replaces H from water: M + H2O → MOH + H2
c. Active metal replaces H from acid: M + HX → MX + H2
d. Halide-Halide replacement: D + BC → BD + C

4. DOUBLE REPLACEMENT: AB + CD → AD + CB
a. Formation of a precipitate from solution
b. Acid-Base neutralization reaction

5. COMBUSTION REACTION Hydrocarbon + oxygen → carbon dioxide + water



mRNA codons chart:

Second Position

First Position (5' end)	U	C	A	G	Third Position (3' end)
U	UUU Phe, UUC Phe, UUA Leu, UUG Leu	UCU Ser, UCC Ser, UCA Ser, UCG Ser	UAU Tyr, UAC Tyr, UAA Stop, UAG Stop	UGU Cys, UGC Cys, UGA Stop, UGG Trp	U C A G
C	CUU Leu, CUC Leu, CUA Leu, CUG Leu	CCU Pro, CCC Pro, CCA Pro, CCG Pro	CAU His, CAC His, CAA Gln, CAG Gln	CGU Arg, CGC Arg, CGA Arg, CGG Arg	U C A G
A	AUU Ile, AUC Ile, AUA Ile, AUG Met	ACU Thr, ACC Thr, ACA Thr, ACG Thr	AAU Asn, AAC Asn, AAA Lys, AAG Lys	AGU Ser, AGC Ser, AGA Arg, AGG Arg	U C A G
G	GUU Val, GUC Val, GUA Val, GUG Val	GCU Ala, GCC Ala, GCA Ala, GCG Ala	GAU Asp, GAC Asp, GAA Glu, GAG Glu	GGU Gly, GGC Gly, GGA Gly, GGG Gly	U C A G

A GUIDE TO THE TWENTY COMMON AMINO ACIDS

AMINO ACIDS ARE THE BUILDING BLOCKS OF PROTEINS IN LIVING ORGANISMS. THERE ARE OVER 500 AMINO ACIDS FOUND IN NATURE - HOWEVER, THE HUMAN GENETIC CODE ONLY DIRECTLY ENCODES 20. 'ESSENTIAL' AMINO ACIDS MUST BE OBTAINED FROM THE DIET, WHILST NON-ESSENTIAL AMINO ACIDS CAN BE SYNTHESISED IN THE BODY.

Chart Key: ALIPHATIC · AROMATIC · ACIDIC · BASIC · HYDROXYLIC · SULFUR-CONTAINING · AMIDIC · NON-ESSENTIAL · ESSENTIAL

Chemical Structure (single letter code) → NAME (A) (three letter code) DNA codons

ALANINE (A) *Ala* GCT, GCC, GCA, GCG	GLYCINE (G) *Gly* GGT, GGC, GGA, GGG	ISOLEUCINE (I) *Ile* ATT, ATC, ATA	LEUCINE (L) *Leu* CTT, CTC, CTA, CTG, TTA, TTG	PROLINE (P) *Pro* CCT, CCC, CCA, CCG	VALINE (V) *Val* GTT, GTC, GTA, GTG	
PHENYLALANINE (F) *Phe* TTT, TTC	TRYPTOPHAN (W) *Trp* TGG	TYROSINE (Y) *Tyr* TAT, TAC	ASPARTIC ACID (D) *Asp* GAT, GAC	GLUTAMIC ACID (E) *Glu* GAA, GAG	ARGININE (R) *Arg* CGT, CGC, CGA, CGG, AGA, AGG	HISTIDINE (H) *His* CAT, CAC
LYSINE (K) *Lys* AAA, AAG	SERINE (S) *Ser* TCT, TCC, TCA, TCG, AGT, AGC	THREONINE (T) *Thr* ACT, ACC, ACA, ACG	CYSTEINE (C) *Cys* TGT, TGC	METHIONINE (M) *Met* ATG	ASPARAGINE (N) *Asn* AAT, AAC	GLUTAMINE (Q) *Gln* CAA, CAG

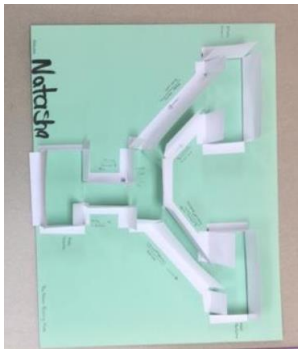
Note: This chart only shows those amino acids for which the human genetic code directly codes for. Selenocysteine is often referred to as the 21st amino acid, but is encoded in a special manner. In some cases, distinguishing between asparagine/aspartic acid and glutamine/glutamic acid is difficult. In these cases, the codes asx (B) and glx (Z) are respectively used.

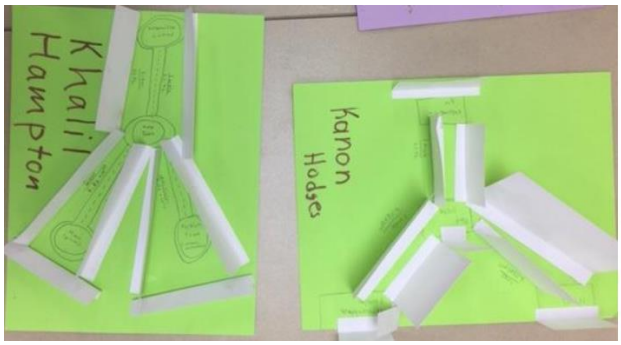
----------my hints to 2nd block!

ALWAYS show all work and units and units of WHAT

-Iron III means Fe^{3+} -oxygen is diatomic -Be sure to match up charges correctly to make compounds! -hydrogen gas is diatomic	-copper II means Cu^{+2} -the pentagon has 5 sides -find % water in the whole thing Mass water/mass whole thing x 100= % water
-assume out of 100 g and convert all to moles! -find the mole ratio	- Use units and units of WHAT for everything. - % yield= ACTUAL /THEORETICAL x 100 -

Part 5- **NH_3 is the product**




Khalil
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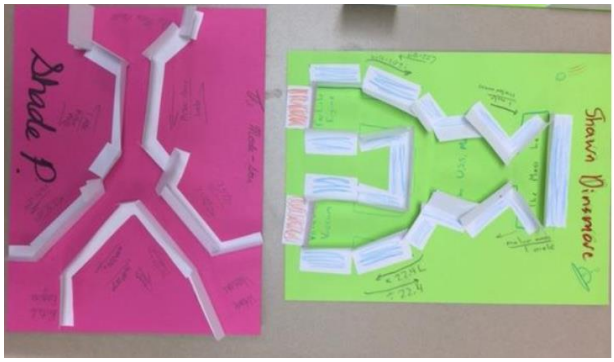
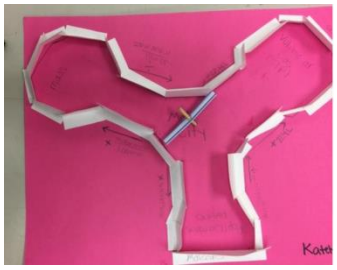
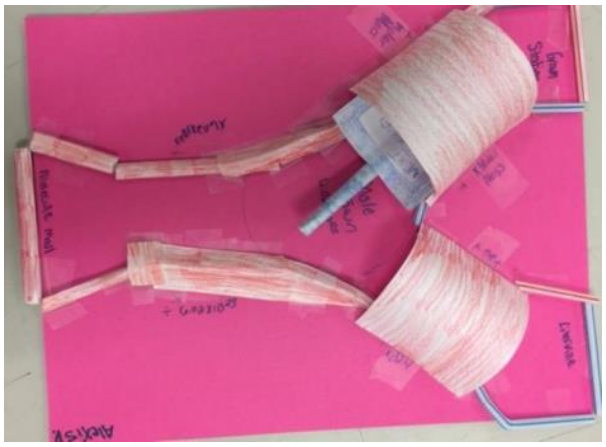
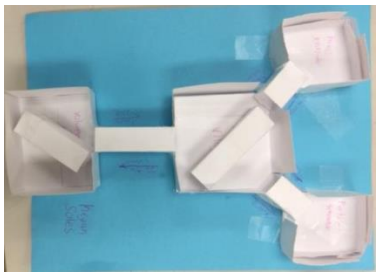
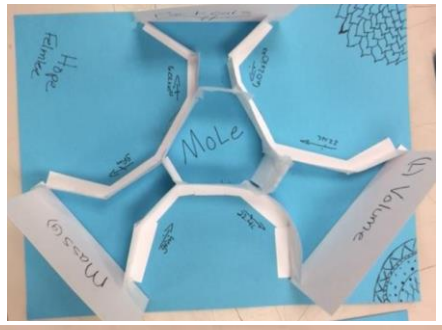

Shade P.
Shawn Dinsmore

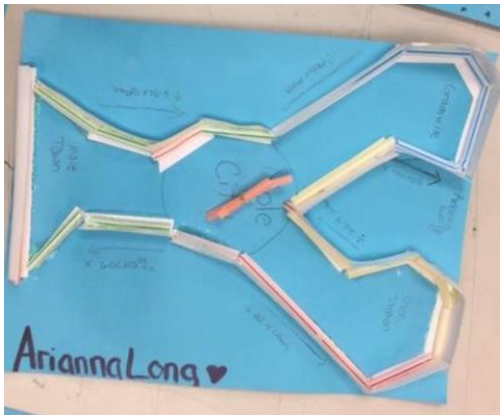


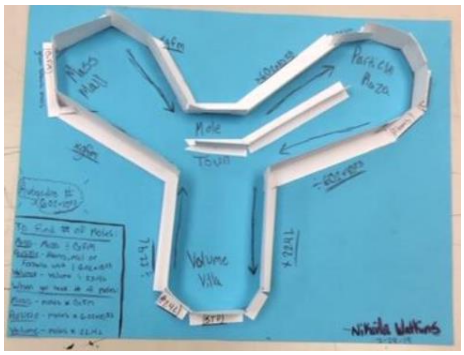





Mole
Mass (g)
Volume


1 mole = 22.4L
22.4L / 1mole
1mole / 22.4L
1mole / grams
grams / 1mole
New York Grams
Britney Rochwell
SHOW YOUR AWESOME TALENT!!


Arianna Long ♥


Volume
Villa


YOU ROCK
Sarah