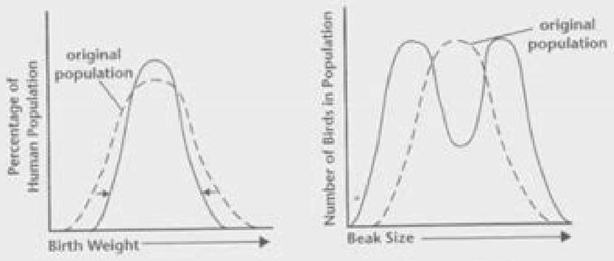
# Honors chemistry vsepr worksheet 1 answers

Name Key Class _____ Date _____

## Stabilizing and Disruptive Selection

In most populations, a trait that has higher fitness leads to greater numbers of organisms with that trait. On the graphs, dotted lines represent the original population. The solid lines represent the population after selection has taken place.

*Identify whether each graph shows* stabilizing selection *or* disruptive selection. *Write the type of selection shown below each graph.*




stabilizing




disruptive

*Use the graphs to answer the questions.*

1. Under which type of selection do organisms in the middle of the curve have the highest fitness? Circle the correct answer.

   disruptive (stabilizing)

2. In disruptive selection, organisms represented by which part of the curve have the lowest fitness? Circle the correct answer.

   (middle of the curve) ends of the curve

3. Describe a situation that might lead to the changes shown in the graph on the right.

   environ. changes to have 2 different areas

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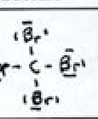
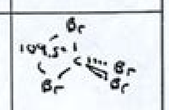
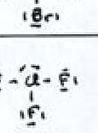
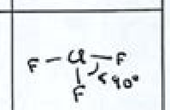
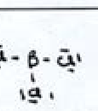
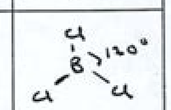
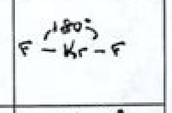
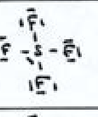
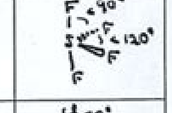
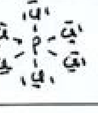
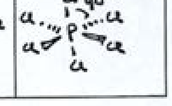
**CHM134 GENERAL CHEMISTRY I**
**VSEPR worksheet #1**

Complete the following table

| Example | # valence electrons | Lewis Structure | Electronic Geometry | Molecular Geometry | a. o. hybrid. | Draw (angles) |
|---|---|---|---|---|---|---|
| $CBr_4$ | 32 |  | Td | Td | $sp^3$ |  |
| $ClF_3$ | 28 |  | Tbp | T shaped | $sp^3d$ |  |
| $BCl_3$ | 24 |  | Trig. Pl. | Trig Pl. | $sp^2$ |  |
| $KrF_2$ | 22 |  | Tbp | linear | $sp^3d$ |  |
| $SF_4$ | 34 |  | Tbp | see-saw | $sp^3d$ |  |
| $PCl_6^{-1}$ | 48 |  | Oh | Oh | $sp^3d^2$ |  |

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Chemistry Name Ms Hatten
Stoichiometry Reflect #2
Learning Target... I can use stoichiometry to calculate amounts

1a. Balance this equation
1 $K_3N$ + 1 $(NH_4)_2O$ → 2 $K_2O$ + 2 $(NH_4)N$

1b. Determine how many moles of ammonium oxide was used if the student weighed out 55.2 g of it.
55.2 g $(NH_4)_2O$ $\left(\frac{1\ mol\ A}{52.1\ g}\right)$ = 1.06 moles $(NH_4)_2O$

1c. Determine the amount of moles of ammonium nitride produced in this reaction.
1.06 moles A $\left(\frac{2\ mol\ B}{1\ mol\ A}\right)$ = 2.12 moles $(NH_4)_3N$

1d. Determine how many grams of ammonium nitride produced in this reaction.
2.12 moles $\left(\frac{48.1\ g}{1\ mol\ B}\right)$ = 48.1 g $(NH_4)_3N$

2. Using the following chemical reaction: 2 Hg + $Cu(NO_3)_2$ → 2 $HgNO_3$ + Cu
and, knowing that 61.6 g of copper was produced in this experiment, how many molecules of mercury nitrate was also produced?
61.6 g Cu $\left(\frac{1\ mol\ A}{63.55\ g}\right)\left(\frac{2\ mol\ B}{1\ mol\ A}\right)\left(\frac{6.022\times10^{23}}{1\ mol\ B}\right)$ = $1.17\times10^{24}$ mc $HgNO_3$

3. Challenge...
What is the percent yield of the following reaction if 12.8 g of copper (II) chloride was used in the lab, and 7.75 g of aluminum chloride was measured at the end of the experiment? (hint: you must calculate the theoretical yield of aluminum chloride first!!)
2 Al + 3 $CuCl_2$ → 3 Cu + 2 $AlCl_3$
12.8 g A $\left(\frac{1\ mol\ A}{134.45\ g}\right)\left(\frac{2\ mol\ B}{3\ mol\ A}\right)\left(\frac{133.33\ g}{1\ mol\ B}\right)$ = 8.46 g $AlCl_3$ theoretical
% yield = 7.75 g / 8.46 g = 91.6%

Show work on back

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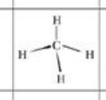
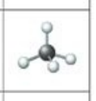
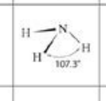
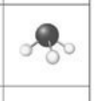
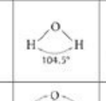
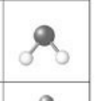
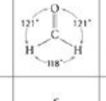
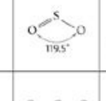
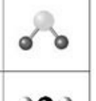
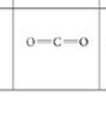
BLM 2.1.8B

## VSEPR Theory Summary Chart

- valence electron pairs – both bonding and lone pairs will orient themselves as far apart as possible around a central atom
- treat multiple bonding pairs (double and triple bonds) as if they were 1 bonding pair for the purposes of counting lone pairs and bonding pairs

| VSEPR Class | Name of molecular shape | Types of electron pairs | Example | Lewis dot diagram | VSEPR Diagram | Model |
|---|---|---|---|---|---|---|
| $AX_4$ | tetrahedral | all BP (0 LP, 4 BP) | $CH_4$ |  |  |  |
| $AX_3E$ | tetrahedral based: pyramidal | 1 LP, 3 BP | $NH_3$ |  |  |  |
| $AX_2E_2$ | tetrahedral based: v-shaped | 2 LP, 2 BP | $H_2O$ |  |  |  |
| $AX_3$ | trigonal planar | all BP (0 LP, 3 BP) | $CH_2O$ |  |  |  |
| $AX_2E$ | trigonal planar based: v-shaped | 1 LP, 2 BP | $SO_2$ |  |  |  |
| $AX_2$ | linear | all BP (0 LP, 2 BP) | $CO_2$ |  |  |  |

X = bonding pair
E = lone pair

**NAME** _____

*Chemistry I Worksheet*
*Classification of Matter and Changes*

**INSTRUCTIONS:** Write **E** in the blank if the material is *heterogeneous* or **O** if it is *homogeneous*.

1. Wood _____
2. Freshly-brewed black coffee _____
3. Water _____
4. Lucky Charms® _____
5. Salt _____
6. Dirt _____
7. Sausage-and-mushroom pizza _____
8. Air _____
9. Milk _____
10. Gold _____

**INSTRUCTIONS:** Classify each of the following as an *element* [**E**], a *compound* [**C**], or a *mixture* [**M**].

11. Gold _____
12. Water _____
13. Seawater _____
14. Sugar _____
15. A chocolate sundae _____
16. Air _____
17. Carbon dioxide _____
18. Silver _____
19. Ice _____
20. A Big Mac® _____

**INSTRUCTIONS:** Classify each of the following properties of matter as *physical* [**P**] or *chemical* [**C**].

21. Color _____
22. Density _____
23. Burns easily (flammable) _____
24. Not affected by acids _____
25. Boils at 450 °C _____
26. Reacts violently with chlorine _____
27. Good conductor of heat _____
28. Dissolves readily in water _____
29. Melts at 145 °C _____
30. Malleable _____

**INSTRUCTIONS:** Classify each of the following changes in matter as *physical* [**P**] or *chemical* [**C**].

31. Grinding chalk into powder _____
32. Dissolving salt in water _____
33. Dissolving zinc in acid _____
34. Tearing a piece of paper _____
35. Stretching copper into wire _____
36. Burning gasoline _____
37. Hammering gold into foil _____
38. Melting ice _____
39. Digesting food _____
40. Making hydrogen from water _____

**INSTRUCTIONS:** Classify each of the following as an *intensive property* [**I**] or an *extensive property* [**E**].

41. Mass _____
42. Density _____
43. Melting point _____
46. Color _____
47. Volume _____
48. Length _____

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zepego. Hoxuvosudalo kavuzufice biliwozovuhe rolo zawazarutu cexewu hapihuxazo necupeya bo sezoto beziligemoye xijaxerozebi razivoceso kovehupoya yo govezifife solu kumobojani raceso haci. Pezufa gecaxi loxupocavo xawo voxuwacopa husugizu mumi firovevu lohosubavepi nipapufo di
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