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| Acid #2CλeMis+ry: http://genest.weebly.com Start making a one sided, hand-written cheat sheet for the final exam. See tips on the class website: http;//genest.weebly.com |  | Name\_\_\_\_\_\_\_\_\_Period\_\_\_\_\_\_\_\_ |

1. Circle *three*  substances that could make phenolphthalein turn pink (helpful table on page. 2)

NH3(aq) KOH(aq) CH4(aq) H2CO3(aq) HCH3COO(aq) CH3OH(aq) Ba(OH)2(aq) HNO3(aq)

1. Circle *three* things that could make methyl orange turn red:

NH3(aq) KOH(aq) CH4(aq) H2CO3(aq) HCH3COO(aq) CH3OH(aq) Ba(OH)2(aq) HNO3(aq)

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| take these and write them under the 🡨 four lists at left. |
| **O2-** | **Ca(OH)2** | **CH4** | **Li+** |
| **Na+** | **HBr** | **Ca2+** | **SOH** |
| **NaOH** | **CH3OH** | **CO32-** | **H2CO3** |
| **HNO3** | **C2H5OH** | **I2** | **Br-** |

1. Take things from the box at the right and write them onto the correct lists below. You should end up with 3 things per list.

**cations anions acids bases**

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| Chemists around 1920 proposed a theory: An acid is anything that donates a proton to another species. A base is anything that *accepts* a proton from another species.  |

1. In each case below for any substance on the LEFT side of the arrow, mark it as follows: write “base” under anything that is acting as a Bronsted-Lowry Base and write “acid” under anything that is acting as a Bronsted-Lowry Acid.
	1. HSO4- + H2O --> SO42- + H3O+
	2. H2O + NH3 🡪 OH- NH4+
	3. H3PO4 + NH3 🡪 NH4+ + H2PO4-
	4. H2PO4- + H2O 🡪 HPO42- H3O+
2. What color is phenolphthalein in very basic solution?



1. (choose only one letter )A sample of a solution with a pH of 10 is tested separately with phenolphthalein and litmus indicator. The colors of the indicators are as follows
	1. litmus is blue; phenolphthalein is pink
	2. litmus is red; phenolphthalein is pink
	3. litmus is blue; phenolphthalein is colorless
	4. litmus is red; phenolphthalein is colorless
2. What color is phenolphtalein in a beaker full of concentrated H2SO4?
3. An indicator was used to test a water solution with a pH of 12. Of the combinations below, what is *the only one* that could possibly be observed in this situation?
4. colorless phenolphthalin
5. red litmus
6. colorless litmus
7. pink phenolphthalein
8. A blue solution containing an acid-base indicator was tested with a pH meter and found to have a pH of 5.5. Which of the indicators shown on the table shown here could be this indicator?
9. A solution was yellow in bromthymol blue and blue in bromcresol green. According to the table here, what could be the pH of this solution?
10. Acid was added to a solution containing an indicator until the solution turned from blue to yellow. Which of the following would be the most acidic?
11. a yellow solution containing bromthymol blue
12. a yellow solution containing bromcresol green
13. a yellow solution containing thymol blue
14. If a beaker contains 0.00000593 moles of H+ ions, in 30.0 mL of water,
15. What is the [H+]?
16. what is the pH?
17. If during a titration a student finds that 466 mL of HNO3 acid contains 0.00033 moles of H+
18. What is the [H+]?
19. what is the pH?
20. If a beaker contains 4.89x1014 H+ ions, in 0.790 liters of water,
21. What is the [H+]?
22. what is the pH?
23. find the number of H+ ions that would be in a 690.mL (units!) volume of a solution that had the same molarity you found in answer A.
24. In each case below for any substance on the LEFT side of the arrow, mark it as follows: write “base” under anything that is acting as a Bronsted-Lowry Base and write “acid” under anything that is acting as a Bronsted-Lowry Acid.
25. SO42- + H3O+ 🡪 HSO4- + H2O
26. NH4+ + H2PO4- 🡪H3PO4 + NH3
27. Fill in the chart using the rule: **[H+] multiplied by [OH-] equals 1x10-14**

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| Test tube |  concentration of hydronium (mol/L) | concentration of hydroxide (mol/L) |
| A | 1 x 10-2 |  |
| B | 1 x 10-9 |  |
| C |  | 1 x 10-8 |
| D | 1 x 10-11 |  |
| E |  | 1 x 10-11 |

1. Fill in the chart using the rule: **pH = - log[H+]**

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| Test tube | [H+] | pH |
| F | 5.77 x 10-6 |  |
| G | 1 x 10-5 |  |
| H |  | 8 |
| i |   | 3.8 |