


Name: _____

Period: _____

Seat#: _____

Directions: Any worksheet that is labeled with an * means it is suggested extra practice. We do not always have time to assign every possible worksheet that would be good practice for you to do. You can do this worksheet when you have extra time, when you finish something early, or to help you study for a quiz or a test. If and when you choose to do this Extra Practice worksheet, please do the work on binder paper. You will include this paper stapled into your Rainbow Packet when you turn it in, even if you didn't do any of this. We want to make sure we keep it where it belongs so you can do it later if you want to (or need to). If you did the work on binder paper you can include that in your Rainbow Packet after this worksheet. If we end up with extra class time then portions of this may turn into required work. If that happens you will be told which problems are turned into required. Remember there is tons of other extra practice on the class website...and the entire internet! See me if you need help finding practice on a topic you are struggling with.

- 1) Write the name and formula for the conjugate bases of the following:
 - a. HNO_2
 - b. H_2SO_4
 - c. H_2PO_4^-
 - d. HF
 - e. $\text{CH}_3\text{CO}_2\text{H}$
 - 2) Is the monohydrogenphosphated ion HPO_4^{2-} amphiprotic? If so, write the formulas of its conjugate acid and its conjugate base.
 - 3) Write the net ionic acid-base reactions for:
 - a. Acetic acid with aqueous ammonia solution.
 - b. Hydrofluoric acid with sodium hydroxide.
 - c. Ammonium chloride with potassium hydroxide
 - d. Sodium bicarbonate with sulfuric acid.
 - e. Chlorous acid with aqueous ammonia solution.
 - f. Disodium hydrogen phosphate with acetic acid.
 - 4) List the following substances in order of increasing acid strength. Look up and/or determine the K_a values for each one to help you with this.
 H_2O H_2SO_3 HCN H_2PO_4^- NH_4^+
 $[\text{Cu}(\text{H}_2\text{O})_6]^{2+}$ NH_3 H_3O^+ HCO_2H HCl
 - 5) What is the pH of a solution that contains 2.60 g of NaOH in 250 mL of aqueous solution? 13.4
 - 6) A 0.12 M solution of an unknown weak acid has a pH of 4.26 at 25°C. What is the hydronium ion concentration in the solution and what is the value of its K_a ? $K_a = 2.52 \times 10^{-9}$
 - 7) Suppose you dissolved benzoic acid in water to make a 0.15 M solution. K_a benzoic acid = 6.3×10^{-5} at 25°C. Determine the following:
 - a. The concentration of benzoic acid 0.147 M
 - b. The concentration of hydronium ion 0.0031 M
 - c. The concentration of benzoate anion 0.0031 M
 - d. The pH of the solution 2.51
 - 8) For each of the following salts, predict whether an aqueous solution would be acidic, basic, or neutral
 - a. Sodium Nitrate NaNO_3
 - b. Ammonium iodide NH_4I
 - c. Sodium bicarbonate NaHCO_3
 - d. Ammonium cyanide NH_4CN
 - e. Sodium hypochlorite NaOCl
 - 9) Consider a solution of 0.80 M solution of sulfurous acid. Determine the following:
 - a. The pH 0.933
 - b. The concentration of sulfite ion $6.4 \times 10^{-8} \text{ M}$
 - c. What happens to the concentration of sulfite ion SO_3^{2-} if the concentration of sulfurous acid is halved?
 - 10) Calculate the pH of a 0.35 M solution of potassium cyanide. K_a for $\text{HCN} = 4.0 \times 10^{-10}$ 11.47
 - 11) Consider a solution of 0.20 M solution of formic acid HCO_2H . Determine the following:
 - a. The pH 2.22
 - b. Now suppose sufficient sodium formate is added to make the solution 0.10 M in formate ion (without changing the total volume). Would you expect the pH to increase or decrease?
 - c. Calculate the pH of this new solution 3.44
 - d. What would the pH be if the concentration of formate ion was increased to 0.20 M? 3.74
 - e. What do you notice about the pH of this solution?
- DESMOS ONLINE PRACTICE**
Someone shared some online flashcards, card sorting, self grading practice for Acid Base topics with me in a website called Desmos. If you would like to use them please go to student.desmos.com
The join code for my class is: _____
- CHEM COLLECTIVE ACID BASE PRACTICE**
<https://tinyurl.com/29x6yup8>
- EVEN MORE PRACTICE! Hard work now during the chapter will set you up for success and save you time long term! Make smart, mature choices!**
- 12) Consider doing some of the Honors Chem worksheets! *(You would be surprised how many AP Chem students miss points on exams for Honors level questions and not even the AP level questions! You will hear me all year long saying "don't lose points in AP Chem for Honors level material!")*
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- <https://mychemistryclass.net/HCrainbowpacket14.html>

- 13)** Read, take notes, try some problems from your Tro online Textbook. *(Remember that the textbook often covers more material than we need for this class. If it isn't something I talked about in my lectures/handouts/ worksheets, then you can skip it! I won't officially assign reading or problems from the textbook because it isn't a very efficient way to teach this class, but some students might need to read the textbook sections, or do extra practice in order for things to "click" differently for them. That is ok! Not everyone is going to need the same amount or type of studying. A lot of this class is figuring out what you personally need to do in order to feel successful. You will have access to the textbook all year, don't forget about it!)*



Chapter 16: Acids and Bases

mlm.pearson.com/northamerica/masteringchemistry/

- 14)** Don't forget that there is extra practice on the class website too! AP Chem Tab → Study Materials Link → Scroll to the chapter we are on → Extra Study Materials Link. *(I don't always have answer keys for the extra materials. If there is one, it will be in the folder!)*
- 15)** Don't forget that there is extra practice on GoFormative too! www.goformative.com
(Another teacher made some assignments on GoFormative the year the school was Remote due to Covid. I have not proofread all the remote assignments, but I have published them so they are available for you to try if you would like!)
- 16)** Don't forget that there is extra practice on AP Classroom too! <https://myap.collegeboard.org>
(AP Classroom is a bit clunky, doesn't allow me to easily post questions in the order we go, sometimes crashes, still has old material we no longer cover, etc. BUT it is a source of questions that we know came from College Board! You can use the "tags" I made to pull up practice that is just on the chapter you are interested in studying.)
- 17)** ScienceGeek.net has some good online practice tests. I haven't checked all of them, but the ones I have checked are pretty good!
<https://www.sciencegeek.net/APchemistry/APtaters/directory.shtml>
- 18)** Don't forget that you can sign up for my Access periods! You must sign up by Tuesday 8am of the week you want to attend. The links are on the front page of my class website and at the top of my Class Calendar.
- 19)** Don't forget that our school has free peer tutoring available through the Academic Leadership class! The links are on the top of my Class Calendar