Respond appropriately in the space provided. Show all work, and work neatly. The following equation, K*w*= [H+] x [OH−] = 1 × 10−14, may help in answering the questions.

1. Label the numbers on the following pH scale as acidic, basic, or neutral.

\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_ \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_

8 9 10 11 12 13 14

0 1 2 3 4 5 6

7

1. A solution has a [H+] = 1 × 10−4 M.
2. Calculate the pH.
3. Is this solution acidic, basic or neutral?
4. Which is greater, the amount of H+ ions, or the amount of OH− ions. (Hint: think of which number is bigger, [H+] or [OH−].)
5. A solution has a [H+] = 1 × 10−7 M.
6. Calculate the pH.
7. Is this solution acidic, basic or neutral?
8. Is [H+] greater than, less than, or equal to [OH−]?
9. A solution has a [H+] = 1 × 10−9 M.
10. Calculate the pH.
11. Is this solution acidic, basic or neutral?
12. Is [H+] greater than, less than, or equal to [OH−]?
13. Complete the following sentences with acidic, basic, or neutral.
    1. When [H+] > [OH−], the solution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    2. When [H+] < [OH−], the solution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
    3. When [H+] = [OH−], the solution is \_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_\_.
14. A solution has a pH of 8.
15. Calculate the [H+]
16. Is this solution acidic, basic or neutral?
17. A solution has a pH of 3.
18. Calculate the [H+]
19. Is this solution acidic, basic or neutral?
20. Describe the difference between a strong acid and a weak acid. Use drawings to support your answer.