EXTRA PRACTICE PROBLEM (similar to Practice Problem 13, page 600)

13. Find the value of [OH-] for a solution with a pH of 8.00.

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If pH = 8.00, pOH = 6.00 because pH + pOH = 14. 

pOH = -\log [OH] 

6.00 = -\log [OH] 

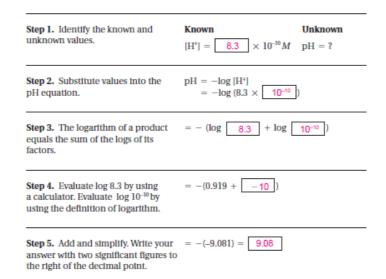
-6.00 = \log [OH] 

10^{-6.00} = 10^{\log} [OH] 

[OH] = 10^{-6}
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GUIDED PRACTICE PROBLEM 16b (page 601)

16b. Calculate the pH of this solution: $[H^+] = 8.3 \times 10^{-10} M$.



GUIDED PRACTICE PROBLEM 22 (page 610)

22. For a solution of methanoic acid exactly 0.1 M, $[H^{+}] = 4.2 \times 10^{-3} M$. Calculate the Ka of methanoic acid.

Analyze

Step 1. What is known about the acid?

It is a 0.1M solution, [H⁺] = $4.2 \times 10^{-8}M$, and the equation for dissociation is

HCOOH ← HCOO⁻ + H*.

Step 2. What is the unknown? Ka

Step 3. What is the expression $K_a = \frac{[HCOO^-] \times [H^+]}{[HCOOH]}$ for the K_a of methanoic acid?

$$K_a = \frac{[HCOO^-] \times [H^+]}{[HCOOH]}$$

Solve

Step 4. What expression can you write to find the equilibrium concentration of HCOOH?

 $0.1000 - 4.2 \times 10^{-3} = 0.0958$

Step 5. Substitute values into the formula for K_a and solve.

$$K_8 = \frac{(4.2 \times 10^{-8}) \times (4.2 \times 10^{-8})}{0.0958} = \frac{1.764 \times 10^{-6}}{0.0958}$$

= 184.1 × 10⁻⁶ = 1.8 × 10⁻⁴

Analyze

Step 6. Look at Table 19.7 on page 607. Explain why your answer is reasonable.

The value for K_a is the same as the one given in the table.